

REMARKS

The Office Action of April 13, 2009 has been received and carefully reviewed. Reconsideration of the pending claims is respectfully requested in view of the above amendment and the following remarks.

I. Claim Objections

The Office Action objected to claim 13 for certain informalities, in particular, recommending that "means for reversing the roles of said first and second servers" should be corrected to "means for inverting the roles of said first and second servers" previously presented in claim 12, or vice-versa. By the above amendment, the previous discrepancy between inverting and reversing has been corrected, whereby reconsideration and withdrawal of this objection is respectfully requested.

II. Rejections Under 35 U.S.C. § 112

Claims 4, 9, 12-14 and 16 were rejected under 35 U.S.C. §112, sixth paragraph, allegedly for improper use of means plus function limitations without adequate written description of corresponding structure, material, or acts for the claimed limitations. These claims have been amended without narrowing the scope thereof, so as to no longer make use of means-plus-function language, whereby reconsideration and withdrawal of the rejections thereof is respectfully requested.

III. Rejections Under 35 U.S.C. § 103 – claims 1, 2, 8, 14 and 17

Claims 1, 2, 8, 14 and 17 were rejected under 35 U.S.C. §103 as being unpatentable over Crosby, "A Ground-Based Regional Augmentation System (GRAS) – The Australian Proposal," in view of Murphy 5,786,773) and Lo, "WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel". Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons.

Claims 1 and 2

Claim 1 recites, *inter alia*, a server including a second output for retransmitting said augmentation data to said computer with a predetermined time-delay relative to

reception at said first input. However, for at least the following reasons, it is respectfully submitted that Crosby, Murphy and Lo do not teach this feature of independent claim 1. The Office Action references Lo for this feature, wherein Lo discloses "differences in latency between augmentation systems can result in differences in the end user's calculation of the vertical protection level (VPL)" Thereafter, the Office Action argues:

It would further be obvious to one skilled in the art to add a predetermined time delay to the transmission of augmentation data in Crosby, as modified by Murphy, because this would reduce the differences in the VPL calculated by an end user transitioning from a region covered by a satellite based augmentation system to a region covered by a ground based augmentation system. If the predetermined time delay is introduced in the transmission of augmentation data to the end user, it follows that the transmission of the feedback data is also delayed by the same amount since the feedback uses the same transmission path.

Lo discloses two augmentation systems: LDC WAAS and GEO WAAS (See Lo page 331, column 2, paragraph 3). The LDC WAAS is essentially just a terrestrial extension of the GEO WAAS, wherein the LDC WAAS receives WAAS messages from the GEO WAAS and retransmits the WAAS messages on Loran (See Lo page 329, column 1, paragraph 2; page 331, column 2, paragraph 2). Naturally, because the LDC WAAS is transmitting WAAS messages received from GEO WAAS, the latency of WAAS messages received from LDC WAAS will be greater than the latency of WAAS message received directly from GEO WAAS.

The Office Action asserts motivation for combining the teachings of Lo with Crosby and Murphy in order to reduce differences in VPL calculated by an end user transitioning from a region covered by a satellite based augmentation system (e.g., GEO WAAS) to a region covered by a ground based augmentation system (e.g., LDC WAAS). However, adding delay to the system of Lo would never be able to reduce the difference in latency between the two systems. Namely, delay may be introduced into either the GEO WAAS or the LDC WAAS. If delay is introduced to the GEO WAAS, then the delay is propagated to the LDC WAAS by virtue of the dependence of the LDC

WAAS upon the GEO WAAS. If delay is introduced to the LDC WAAS, the disparity between the latency of the GEO WAAS and the LDC WAAS is even greater, thereby exhausting the proposed motivation. For at least this reason, the skilled artisan would not have a reasonable expectation of success in the combination proposed in the Office Action, and claim 1 is patentably distinct.

Additionally, Lo discloses that "additional message latency causes a degradation of the VPL calculated by the user." (See Lo page 331, column 2, paragraph 3). As should be appreciated, introducing delay is generally never a good idea. However, notwithstanding this generality, the Office Action proposes adding delay to reduce the differences between different augmentation systems. Essentially, the Office Action proposes reducing the quality of VPL calculation from one augmentation system for the sake of consistency. It is submitted that one skilled in the art would be of the opinion that it is more useful to maintain a disparity in latency between two systems and simply use the best augmentation system available. For at least these reasons, one skilled in the art would not interpret Lo as teaching or suggesting this feature of claim 1.

With reference to the combination of Crosby, Murphy and Lo, the Office Action argues introducing delay to the transmission of augmentation data to the end user leads to a delay in the transmission of the feedback data because the feedback uses the same transmission path. However, as discussed in connection with Lo, the skilled artisan would view increased latency as generally a bad thing because it reduces the effectiveness of augmentation data. Moreover, the Office Action proposes introducing delay to a terrestrial based augmentation system based on the teachings of Lo. However, the problem with Lo was that there was too much delay with the terrestrial based augmentation system. It is counterintuitive to argue a system with too much delay teaches adding delay, and would be so understood by persons of ordinary skill in the art. Applicant, moreover, has not found any teaching or suggestion within Crosby or Murphy for introducing delay into the feedback path of claim 1.

Consequently, Lo would be interpreted as teaching away from introducing a delay, and the person of ordinary skill in the art would not see any advantages to adding this delay. Further, Crosby and Murphy fail to remedy the aforesaid deficiencies of Lo. For these reasons, therefore, no *prima facie* case of obviousness has been set forth,

and the subject matter of claim 1, and claim 2 depending therefrom, is nonobvious over the proposed combination of Crosby in view of Murphy and Lo.

Claim 1 further recites a first output for sending said augmentation data to at least one user. The Office Action references Crosby for this feature and references Murphy for the second output, discussed above, wherein Murphy discloses an integrity loop. As should be appreciated, neither Murphy nor Crosby teach or suggest two outputs. In fact, the Office Action acknowledges that the integrity loop in Murphy is implemented using the same output that transmits to the users (i.e., the first output). However, notwithstanding this apparent deficiency, the Office Actions maintains that the result is functionally equivalent in that the transmission is fed back to the ground station so that the ground station can monitor its broadcasts.

The Office Action is, however, mistaken in that combining the first output with the second output is functionally equivalent. Namely, the second output introduces a "predefined time-delay" which is not necessarily present in the first output. As discussed above in connection with Lo, the greater the delay, the less effective the augmentation data is. Accordingly, it is most advantageous for users (i.e., the first output) to have as little delay as possible, such that one skilled in the art would not interpret Murphy as teaching or suggesting a functionally equivalent result as propounded by the Office Action. Moreover, Applicant has not found any teaching or suggestion within Crosby and Lo for introducing delay into the feedback path of claim 1.

Consequently, Murphy would not be interpreted as teaching a second output for an integrity loop. Further, Crosby and Lo fail to remedy the aforesaid deficiencies. For these further reasons, therefore, no *prima facie* case of obviousness has been set forth, and the subject matter of claims 1 and 2 is nonobvious over the proposed combination of Crosby in view of Murphy and Lo.

Reconsideration and withdrawal of these rejections is respectfully requested for at least the foregoing reasons.

Claims 8, 14, and 17

Independent claim 8 recites a system with at least one data server that comprises, *inter alia*, a second output for retransmitting said augmentation data to said

at least one computer with a predetermined time-delay relative to reception at said first input. Claim 8 further recites the at least one data server comprises a first output for sending said augmentation data to at least one user. As the Office Action rejected these features of claim 8 on the same grounds as similar limitations in claim 1, Applicant reiterates the arguments set forth above in connection with claim 1 as demonstrating nonobviousness of claim 8 and claims 14 and 17 depending therefrom. For at least these reasons, Lo would be interpreted as teaching away from introducing a delay, and Crosby and Murphy fail to remedy the aforesaid deficiencies of Lo. Moreover, Murphy would not be interpreted as teaching a second output for an integrity loop, and Crosby and Lo fail to remedy these deficiencies of Murphy. For these reasons, no *prima facie* case of obviousness has been set forth, and the subject matter of claim 8, and claims 14 and 17 depending therefrom, is nonobvious over the proposed combination of Crosby in view of Murphy and Lo. Reconsideration and withdrawal of these rejections is therefore respectfully requested for at least the foregoing reasons.

IV. Rejections Under 35 U.S.C. § 103 – claims 3, 4, 6 and 15

Claims 3, 4, 6, and 15 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Crosby in view of Murphy, Lo, and Eschenbach 6,529,830. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. Claims 3, 4, and 6, and 15 depend from independent claims 1 and 8, respectively. As discussed above, Crosby, Murphy, and Lo do not render the independent claims 1 and 8 obvious. Eschenbach, moreover, fails to remedy the aforementioned deficiencies of the proposed combination of Crosby, Murphy, and Lo. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claims 3, 4, 6 and 15 and the claims are patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Eschenbach. Furthermore, claims 3, 4, 6 and 15 recite further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

V. Rejections Under 35 U.S.C. § 103 – claims 5 and 7

Claims 5 and 7 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Crosby in view of Murphy, Lo, and Walter "Flight Trials of the Wide-Area Augmentation System (WAAS)". Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons.

Claim 5

Claim 5 depends from independent claim 1. As discussed above, Crosby, Murphy, and Lo do not render claim 1 obvious. Walter, moreover, fails to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claim 5 and the claim is patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Walter. Furthermore, claim 5 recites further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejection of claim 5 is respectfully requested under 35 U.S.C. §103.

Claim 7

Claim 7 also depends from independent claim 1, and is thus patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Walter at least because Walter fails to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo discussed above in connection with independent claim 1. In addition, the server in claim 7 includes a third input for receiving data transmitted by one of the receiver stations. The Office Action references Walter for this feature, wherein Walter teaches a reference station, collocated with the WAAS Master Station, used to check the accuracy of the broadcast corrections. However, the WAAS Master Station of Walter is part of a GEO WAAS, whereby there is no server (See Walter figure 1). Namely, the WAAS Master Station determines the augmentation data and sends it to a geostationary satellite for distribution to users. In contrast, claim 7 includes "at least one computer for determining said augmentation data" and "a data server for supplying complementary augmentation data," where the computer sends augmentation data to the server and the server distributes the augmentation data. Thus, as one skilled in the

art will appreciate, the WAAS Master Station is most comparable to the computer of claim 7.

Additionally, with reference to the combination of Crosby in view of Murphy, Lo, and Walter, the Office Action proposed combining Walter with Crosby in view of Murphy and Lo to allow the generated augmentation data to be verified. However, the server does not generate the augmentation data. Rather the computer generates the augmentation. Thus, if the server receives data from the receiver stations and finds a problem with the augmentation data received from the computer, it will have to contact the computer. One skilled in the art will appreciate that this indirection is unnecessary to achieve the proposed motivation. Redirecting the data from the server to the computer entails more costs and more points of failure, and thus would not be attempted by persons of ordinary skill in the art.

Furthermore, to verify generated augmentation data, the server would need to be able to generate augmentation data from the data received by the receiver station (this is what the computer does). Notwithstanding some benefit, adding the ability of the server to process data from the receiver station and generate augmentation data would impose additional costs that seem unnecessary in view of the Office Action's proposed motivation. Accordingly, one skilled in the art will not have motivation to combine Walter with Crosby in view of Murphy and Lo, whereby the Office Action's proposed combination of Crosby in view of Murphy, Lo, and Walter fails.

Notwithstanding the foregoing arguments, claim 7 depends from independent claim 1. As discussed above, Crosby, Murphy, and Lo do not render claim 1 obvious. Walter, moreover, fails to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo.

For at least these reasons the Office Action fails to establish a *prima facie* obviousness showing with respect to claim 7 and the claim is patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Walter. Furthermore, claim 7 recites further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

VI. Rejections Under 35 U.S.C. § 103 – claims 9-11

Claims 9-11 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Crosby in view of Murphy, Lo, Applicant's admitted prior art, and Ballard 6,078,960. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. Claims 9-11 depend from independent claim 8. As discussed above, Crosby, Murphy, and Lo do not render claim 8 obvious. Applicant's admitted prior art and Ballard, moreover, fail to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo with regard to the subject matter of claim 8. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claims 9-11 and the claims are patentably distinct from the proposed combination of Crosby in view of Murphy, Lo, Applicant's admitted prior art, and Ballard. Furthermore, claims 9 and 11 recite further patentably distinct features. For at least these reasons, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

Claim 10

Claim 10 is patentably distinct from Crosby in view of Murphy, Lo, Applicant's admitted prior art, and Ballard at least by virtue of its dependency from independent claim 8. In addition, claim 10 recites that the augmentation data retransmitted to said plurality of computers includes an identifier of said selected computer. The Office Action appears to take official notice and argues:

The Internet Protocol (IP) is a well known protocol for communications between computers where each packet transmitted from one computer to another contains an identifier of the receiving computer. It would have therefore been obvious to include an identifier of the selected computer in the augmentation data retransmitted by the server.

Thus, the Office Action appears to be arguing that the IP address of the selected computer will be embedded in packets destined for the computers, whereby this IP address identifies the selected computer.

However, the augmentation data is retransmitted to a plurality of computers, with only one computer selected. As a skilled artisan will appreciate, there is generally only

one computer per IP address. Moreover, the IP address embedded with packets corresponds to the computer to which the packet is destined, not a selected computer as the Office Action appears to be arguing. Accordingly, for the plurality of computers to receive the augmentation data, each computer is going to receive packets containing their own IP address regardless of the selected computer, whereby an IP address does not teach this feature.

For at least these reasons the Office Action fails to establish a *prima facie* obviousness showing with respect to claim 10 and the claim is patentably distinct from the proposed combination of Crosby in view of Murphy, Lo, Applicant's admitted prior art, and Ballard. Furthermore, claim 10 recites further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

VII. Rejections Under 35 U.S.C. § 103 – claims 12, 13 and 17

Claims 12, 13 and 17 were rejected under 35 U.S.C. §103 as being allegedly unpatentable over Crosby in view of Murphy, Lo, and Ballard. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. Claim 12, 13 and 17 depend from independent claim 8. As discussed above, Crosby, Murphy, and Lo do not render claim 8 obvious. Ballard, moreover, fails to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo with respect to the subject matter of independent claim 8. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claims 12, 13 and 17, and the claims are patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Ballard. Furthermore, claims 12, 13 and 17 recite further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

VIII. Rejections Under 35 U.S.C. § 103 – claim 16

Claim 16 was rejected under 35 U.S.C. §103 as allegedly unpatentable over Crosby in view of Murphy, Lo and Applicant's admitted prior art. Reconsideration and

withdrawal of this rejection is respectfully requested for at least the following reasons. Claim 16 depends from independent claim 8. As discussed above, Crosby, Murphy, and Lo do not render claim 8 obvious. Applicant's admitted prior art, moreover, fails to remedy the deficiencies of the proposed combination of Crosby, Murphy, and Lo. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claim 16 and the claim is patentably distinct from the proposed combination of Crosby in view of Murphy, Lo and Applicant's admitted prior art. Furthermore, claim 16 recites further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejection of claim 16 is respectfully requested under 35 U.S.C. §103.

IX. New Claims

Claims 18-20 have been added to the Office Action without introduction of any new matter, and favorable consideration thereof is requested.

New claims 18 and 19 depend from independent claims 1 and 8, and are thereby patentably distinct from the combinations proposed in the Office Action for the reasons discussed above. In addition, these claims further recite "said predetermined time-delay simulates a transmission delay as would be caused by a geostationary satellite." In view of the Office Action's arguments propounded with respect to the "predetermined time-delay," and Applicant's review of the Crosby, Murphy, Lo, Applicant's admitted prior art, Ballard and Eschenbach, it is respectfully submitted that the aforesaid feature is patentably distinct, as none of these references teach or otherwise suggest this additional feature. Favorable consideration of new claims 18 and 19 is therefore respectfully requested for at least these reasons.

New independent claim 20 recites a system for supplying complementary augmentation data for satellite navigation user signals. The system includes at least one computer for determining the augmentation data from data transmitted by at least one receiver station receiving navigation information sent by at least one satellite. The system further provides at least one data server which includes a first input for receiving the augmentation data transmitted by the computer and a third input for receiving data transmitted by the receiver station. Further, the at least one data server includes a first

output for sending the augmentation data to at least one user and a second output for retransmitting the augmentation data to the at least one computer with a predetermined time-delay relative to reception at the first input. The predetermined time-delay of claim 20, moreover, simulates a transmission delay as would be caused by a geostationary satellite, and the second output retransmits the augmentation data using a receiver station number corresponding to the one of the at least one receiver station.

Although the Office Action does not address claim 20, Applicant directs the Examiner's attention to the arguments propounded in claims 1 and 7, and incorporate the arguments herein by reference. Additionally, in view of the Office Action's arguments propounded with respect to the "third input," and Applicant's review of the Crosby, Murphy, Lo, Applicant's admitted prior art, Ballard and Eschenbach, it is respectfully submitted that the aforesaid references do not render obvious retransmitting the augmentation data using a receiver station number corresponding to the one of the at least one receiver station, or a predetermined time delay that simulates a transmission delay as would be caused by a geostationary satellite. Accordingly, favorable consideration of new claim 20 is respectfully requested.

CONCLUSION

For at least the above reasons, reconsideration of the pending claims is respectfully requested.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application; the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any extensions of time be required and/or any fees be due as a result of the filing of this response, any such extensions of time are hereby requested and the Commissioner is hereby authorized to charge any such fees to the Deposit Account Number 06-0308, LUTZ200700.

Respectfully submitted,

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